

NOTES ON ROTIFERS, WITH DESCRIPTION OF FOUR NEW SPECIES,  
AND OF THE MALE OF STEPHANOCEROS EICHORNII.

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PLATE IX.

(Read October 21st, 1892.)

*Pleurotrocha grandis*=*Diglena ferox*.

In April last year I described a Rotifer which I find in the river Wandle, and which is unmentioned by any of the authorities. I then doubtfully assigned it to the genus *Pleurotrocha*, chiefly on account of the absence of eyespots. Since the publication of my note on the subject, which, with Mr. Chapman's figure of the Rotifer, will be found in the Journal of this Club for July last, I have had opportunities of examining specimens of *Diglena mustela*, which it very closely resembles, and have come to the conclusion that it would more properly be classed along with that species. Mr. Gosse did not consider that the absence of eyespots excluded that species from the genus *Diglena*, and therefore I see no reason why mine should not also be admitted. There is already, however, a *Diglena grandis*, and to prevent confusion it is necessary to change the specific name also. In future I propose to call this Rotifer *Diglena ferox*.

*Pterodina* on *Asellus vulgaris*.

It may be remembered that when Mr. Parsons described a new species of *Pterodina* which he had found living commensally on *Asellus*, and which he named *Pterodina cæca*, I mentioned that in seeking for that Rotifer I had also found the *P. truncata* of Gosse, and, as I then thought, more than one other species. Having since pursued this subject with some care, I have arrived at the conclusion that I have really met with but three species, viz.:—*Pterodina cæca*, Parsons; *P. truncata*, Gosse, and *P. elliptica* of Ehrenberg. The great

variety of form which I then thought amounted to specific difference is, I believe, due to the condition of the reproductive system or to the repletion or otherwise of the digestive organs. The Pterodina described by Dr. Barnett Burn in "Science Gossip," 1889, p. 104, differs in some respects from that which I consider the *P. truncata* of Gosse (*vide* Pl. XXV., Fig 4, Society's Journal, January, 1892), and may possibly be another species, but I have not as yet been able to find it. I have been much assisted in this investigation by Messrs. Bryce and Percy Thompson, both of whom appear to have been acquainted with these forms of Pterodinæ before my attention was directed to them by Mr. Parsons.

*Philodina commensalis* (sp. nov. mihi).

Sp. Char.: Body smooth; corona large with slightly bulging neck; eyes roud-ovate, oblique; teeth two; foot thick, abrupt; spurs large; animal hyaline, colourless; living on *Asellus vulgaris*. Length  $\frac{1}{50}$  in.

In the January number of this Society's Journal, on Pl. XXV, Fig 2, Mr. Chapman has given a sketch of a Philodina, which I also found living commensally on some *Asellus*. As there appears to be no published description of this Rotifer it is necessary to give it a name, and as I have never found it except attached to *Asellus*, I propose to call it *P. commensalis*. At first sight it much resembles a Rotifer macrurus, but it has nevertheless more of the square compact form of a Philodina. It is hyaline and colourless except for the contents of the alimentary canal. The body is marked with the usual longitudinal flutings, and merges abruptly into the longish thick telescopic foot, which is armed on the penultimate joint with conspicuous spurs, and terminates in the usual toes. The spurs are peculiar in shape, having a distinct heel and being separated by a gap, which is equal to about half the width of the base of the spur. They are broadest at the base, then contract slightly and again widen before tapering to the point. The corona is large, measuring quite the width of the body when the animal is swimming. The neck is thickened and bulging. The frontal column is of the ordinary form. The antenna tapers towards the extremity and is carried rather backwards. Eyes are pale roud-ovate and set at an angle like

those of *P. citrina*. There are two teeth in each ramus of the trophi. The viscera present no peculiarity requiring notice. The reproduction is viviparous. They vary much in size, but average  $\frac{1}{50}$  in. in length. Habitat: Commensal on *Asellus vulgaris* from Putney, Wandsworth, and Epping Forest.

*Stephanoceros Eichornii: The Male.*

Although I imagine every member of this Club is acquainted with the handsome rotifer *Stephanoceros*, and although it has been known since 1761, marvellous to relate, there is no record that anyone has seen the male. Thanks to Mr. Hood, of Dundee, I have recently had an opportunity of doing so, and, though of course all credit for the discovery is due to Mr. Hood, who, it seems, found and hatched the male eggs last year and sent specimens with descriptions and drawings of the male to the Glasgow Microscopical Society, so far as I can learn nothing has been published, and I deem the matter of sufficient interest to bring before you. It was in April that Mr. Hood sent me some *Stephanoceros*, some of which carried male eggs. He told me that he had been unable to find these male eggs after May last year, but being on the look-out for them found them again in April this year. I have met with but few *Stephanoceros* this year, and have looked in vain for the male eggs, the season being probably past; with those sent me by Mr. Hood, however, I was very fortunate, for I was able to keep them until the males appeared. These male eggs were more numerous and only about half the size of the ordinary female (parthenogenetic) ova, each female carrying upwards of a dozen of them within the body. Some I measured were about  $\frac{1}{50}$  in. in diameter. They were laid in batches of three or four, some two or three hours before the young males emerged from them; I could see decided movement of some of the embryos inside the body of the female before the eggs were laid, but in no one instance did I observe a male born alive. On the contrary I almost invariably found the empty shell from which the young had escaped. After birth the young males, measuring about  $\frac{1}{80}$  in., were within the tube, and from it I distinctly saw two or three of them bore their way out through the side, leaving in one case a hole with ragged edges. This process took them six or eight hours. The appearance of the male is much like that

of other of the floscularian males, and I have roughly sketched it to assist others in future identification. There is a sort of head with two red eyespots. This is surrounded by a ciliary wreath, of which the cilia are very long and active. Below this the body gradually tapers to the foot. There are two antennæ, to which, as to the eyespots, nerves could be traced from a largish square-shaped ganglion in the neck. The sperm sac occupies the lower half of the body cavity. There is also a small contractile vesicle, and the lateral canals, with at least three vibratile tags on each side, are easy to make out.

The development of the female has been described by Mr. Gosse and others, and I have been able to confirm his observations. The eggs I saw developed were, however, invariably laid as eggs before the birth of the young, and I have, as yet, seen no instance of viviparous birth. The eggs were also all laid before the death of the parents, which, however, invariably died before they were all hatched. Viviparous reproduction has been seen by Rosseter, English, Hood, and others.

*Notholca Hoodii* (sp. nov. mihi).

Sp. Char. : Lorica ovato-rhomboid, broadly truncate and with six spines before, narrowly behind ; ridges and furrows strongly marked and reaching to posterior margin ; two lateral spines on outer surface of dorsal plate of lorica.

This somewhat resembles both *Notholca jugosa* and *Notholca spinifera*. It differs from the former, however, inasmuch as the ridges and furrows on its dorsal lorica reach quite to the posterior margin, and from the latter in the position of the lateral spines, which, instead of protruding from between the two plates, are on the outer edge of the external surface of the dorsal plate, at about the junction of its middle and lower third. I have only seen them lying flat upon the dorsal plate, and was unable to ascertain whether they are moveable like those of *N. spinifera*, as my specimens were few and in a dying condition.

*Anuraea biremis* of Ehrenberg, another species with spines similarly situated, has only four occipital spines instead of six, which that now described possesses. I am indebted to Mr. Hood, of Dundee, for this Rotifer, who found it at Westport, Ireland, in sea water.

*Rattulus bicornis* (sp. nov. mihi).

Sp. Char. : Body fusiform, with two equal occipital spines ; toes two stylate, equal ; substyles two ; brain clear.

This little fellow I found at Roehampton, but although apparently undescribed, I learn that it is common also in Scotland and Ireland. Its distinguishing feature is the presence of the two equal spines on the occipital edge of the lorica. The whole lorica has also a twisted appearance, and the method of swimming is peculiar. The trophi are of the usual asymmetrical virgate pattern, and its internal economy being as ordinary in members of the genus, needs no comment.

Length about  $\frac{1}{8}$  in.

Habitat— Pond near Roehampton, Scotland, Ireland ; common.

*Callidina sordida* (sp. nov. mihi).

Sp. Char. : Body fusiform, depressed, with alternate enlargements and contractions ; opaque ; greyish brown ; much corrugated and covered with adhering foreign matter ; teeth two ; foot short and thick ; spurs long and flexible at points ; two tubercle-like processes on dorsal surface of neck on level of antenna.

This is a large *Callidina* resembling both *Rotifer tardus* and *Philodina macrostyla* in general appearance, but intermediate in size and paler in colour than either of these Rotifers. It is very sluggish and torpid in habit, being mostly found in a retracted and seemingly dormant condition in the muddy sediment of the washings of the moss amongst which it lives. It is always thickly encrusted with stones and other foreign matter entangled in the viscous secretion which covers it. The integument of the body is very tough and coriaceous in character, and may often be found intact, like an empty shell, after the death of the animal and the disappearance of the softer parts. The longitudinal flutings are very marked. The body is less changeable in form than that of *R. tardus*, and when the animal is moving it retains its somewhat fusiform but depressed shape, with alternate prominent swellings and contractions. The head, neck, and foot are perfectly transparent and colourless, and it is when the head is slowly protruded that the most distinctive feature of the species becomes

apparent, viz., tubercles or horn-like processes at the base of the neck on either side of the dorsal antenna. The corona is powerful, and when extended is about two-thirds the width of the widest part of the body. The anterior column is stout and long. The buccal orifice is wide, and the lower lip large and prominent. The dorsal antenna is sturdy and of the usual form. The trophi are large, with two teeth on each ramus. The foot, which is only protruded when the Rotifer is crawling, is stout and gradual. It is armed with two fair-sized pointed spurs, which are flexible at the ends, but less evidently jointed than those of *R. tardus*. The toes are three, and also want the telescopic joints of those of that Rotifer. Its average length is  $\frac{1}{4}$  in.

I found it in moss which came from Epping Forest.